

# इंटरनेट

# मानक

## Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

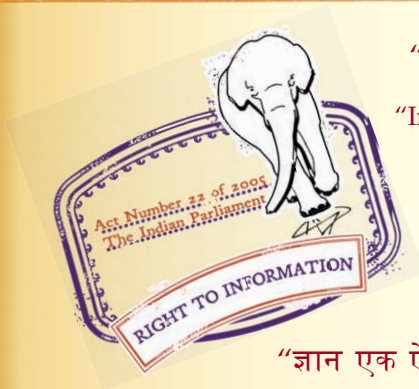
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9317 (2001): Glossary of terms, definitions and measuring conditions for alpine skis [PGD 27: Mountaineering Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



भारतीय मानक  
स्कीस् हेतु पारिभाषिक शब्दावली, परिभाषाएँ व  
मापन अवस्थाएँ  
( पहला पुनरीक्षण )

*Indian Standard*  
GLOSSARY OF TERMS, DEFINITIONS AND  
MEASURING CONDITIONS FOR SKIS  
( *First Revision* )

ICS 01.040.97; 97.220.20

© BIS 2001

**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

## FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Mountaineering Equipment Sectional Committee had been approved by the Basic and Production Engineering Division Council.

This standard was originally published in 1979. This revision covers glossary of terms, definitions and measuring conditions pertaining to skis. The requirements given in IS 9969 : 1981 'Alpine ski terminology' have now been covered in this standard. Accordingly, IS 9969 shall be withdrawn after the publication of this standard.

During the preparation of this standard, it became obvious that for better communication a common technology was needed. Therefore, it was decided to prepare this standard on skis terminology which contains all technical terms used in Indian Standards already published on skis, as well as new terms which are of importance for product specification.

In order to improve communication within the skiing community it is highly recommended that all experts involved in technical publications are encouraged to use these terms with respect to commonly agreed definitions. These definitions are included to encourage uniformity of terminology in product specifications.

While preparing this standard, considerable assistance has been derived from ISO 6289 : 1985 'Skis — Terms and definitions' and ISO 7796 : 1985 'Skis — Geometry — Measuring conditions'.

# *Indian Standard*

## GLOSSARY OF TERMS, DEFINITIONS AND MEASURING CONDITIONS FOR SKIS ( *First Revision* )

### 1 SCOPE

This standard defines terms for the specification of important characteristics of alpine, cross-country skis (XC-skis) and snowboards. This standard also specifies the conditions for measuring the geometrical characteristics of skis.

These definitions are intended to provide better uniformity of terminology in product specifications.

### 2 GENERAL TERMS

**2.1 Ski** — Sliding skid of narrow width in relation to its length, with the front end turned up in a radius to ride over obstacles, used as a sporting and recreational device for sliding on snow, ice and artificial snow, but also serving other purposes.

The term 'ski' does not include under other conditions, for example sliding on plastic mats, unless this is clearly stated by the manufacturer.

It is understood that in this standard the term 'ski' is used to refer to different types of snow skis<sup>1)</sup>.

**2.2 Alpine Ski** — A snow ski used for sliding down slopes as a result of gravitational force. The control of direction and speed is accomplished through combined motion in the longitudinal and lateral directions of the ski.

In order to transmit the steering forces, the edges of the running surface are generally equipped with hard and wear-resistant materials.

**2.2.1 Mountaineering Ski** — Alpine ski designed for the ascent and descent of mountains. Usually with so-called touring binding which allow heel lift in the ascent phase. (Normally, the ski is light, short and wide.)

**2.2.2 Snowfield Slider** — Ski used for sliding down snowfields. Generally its length does not exceed twice the length of the boot.

**2.2.3 Downhill Ski** — Alpine ski intended for downhill competitions in which high speeds are attained according to the relevant rules.

**2.2.4 Slalom Ski** — Alpine ski intended for slalom

competitions according to the relevant rules.

**2.2.5 Giant Slalom Ski** — Alpine ski intended for giant slalom competitions according to the relevant giant slalom rules.

**2.2.6 Freestyle Ski** — Alpine ski intended to be used in freestyle competitions according to the regulations of freestyle associations.

**2.2.7 Ballet Ski** — Freestyle ski intended for ballet and acrobatic ballet type manoeuvres. Easy turning and skidding capabilities are key characteristics.

**2.2.8 Adult's Ski** — Ski intended to be used by adult persons who weigh more than 45 kg.

**2.2.9 Junior Ski** — Ski intended to be used by persons who weigh 30 to 45 kg.

**2.2.10 Children's Ski** — Ski intended to be used by persons who weigh less than 30 kg.

**2.3 Cross-country Ski (XC-ski)** — Snow ski designed for skiing over flat and hilly terrain.

**2.3.1 Cross-country Racing Ski** — Cross-country ski designed for use in cross-country competition. Design emphasis is placed on light weight in addition to gliding ease in well-prepared tracks.

**2.3.2 Light Touring Ski** — Cross-country ski designed for skiing in tracks and outside tracks under relatively good snow conditions.

**2.3.3 Touring Ski** — Cross-country ski designed for skiing in tracks as well as outside tracks.

**2.3.4 Mountain Ski** — Cross-country ski designed for skiing in mountainous terrain.

**2.3.5 Wilderness Ski (Bush Walker)** — Cross-country ski designed for skiing outside tracks under all snow conditions. A very short (usually about 150 cm) and broad ski.

**2.3.6 Cross-country Adult's Ski** — Ski intended to be used by adult persons who weigh more than 45 kg.

**2.3.7 Cross-country Junior Ski** — Ski usually of the same construction as an adult's ski but shorter, intended for juniors and adults with relatively short height and a weight of 30 to 45 kg.

**2.3.8 Cross-country Children's Ski** — Ski usually of a

<sup>1)</sup> The term 'snow ski' is sometimes used as a general term for all skis used in Alpine and Nordic skiing.

special construction intended to be used by children who walk rather than glide on the snow and who weigh less than 30 kg.

**2.4 Snowboard (Ski)** — Single plane device ridden with a sideways stance with the feet angled to the longitudinal axis of the device.

**2.4.1 Alpine Snowboard** — Snowboard designed for practice of the alpine type of riding, especially competition oriented.

**2.4.2 Free-ride Snowboard** — Snowboard for the purpose of riding mountain on natural terrain with different snow conditions.

**2.4.3 Freestyle Snowboard** — Snowboard for the purpose of doing tricks and manoeuvres adapted directly from skate boarding.

**2.4.4 Goofy** — Snowboard riding with the right foot forward.

**2.4.5 Regular** — Snowboard riding with the left foot forward.

**2.5 Monoski** — Single plane riding ski ridden with the feet parallel to the longitudinal axis of the ski.

**2.6 Telemark Skiing** — Type of alpine skiing technique where the heel of the boot is not fixed during downhill skiing.

### 3 TERMS RELATING TO DESIGN FEATURES

#### 3.1 Terms Relating to Functional Ski Elements (see Fig. 1 and Fig. 2)

**3.1.1 Bottom Surface (Running Surface)** — The

underside of the ski which interfaces the snow when skiing.

**3.1.2 Top Surface** — The side of the ski opposite to the bottom surface.

**3.1.3 Side Surface** — Surface which borders the sides of the ski. The side surface may have a stepped profile.

**3.1.4 Bottom Groove** — A concave recess running longitudinally along the bottom surface of the ski.

**3.1.5 Bottom Surface Edge** — Intersection of bottom surface and side surface.

**3.1.6 Ski Tip** — The extreme forward point of the ski.

**3.1.7 Ski Tail** — The extreme rear edge of the ski.

**3.1.8 Ski Shovel** — The forward section of the ski, which is turned up in order to ride easily over obstacles.

**3.1.9 Forward Contact Line** — The forward most contact line between the bottom surface of the ski and a flat surface against which the ski body is pressed.

**3.1.10 Rear Contact Line** — The rear most contact line between the ski bottom surface and a flat surface against which the ski body is pressed.

**3.1.11 Body of Ski** — The part of the ski between the forward contact line and the rear contact line.

**3.1.12 Tail Turn-up** — The turned up portion of the ski rearward of the rear contact line.

**3.1.13 Forebody of Ski** — The front half of the ski body towards the shovel.

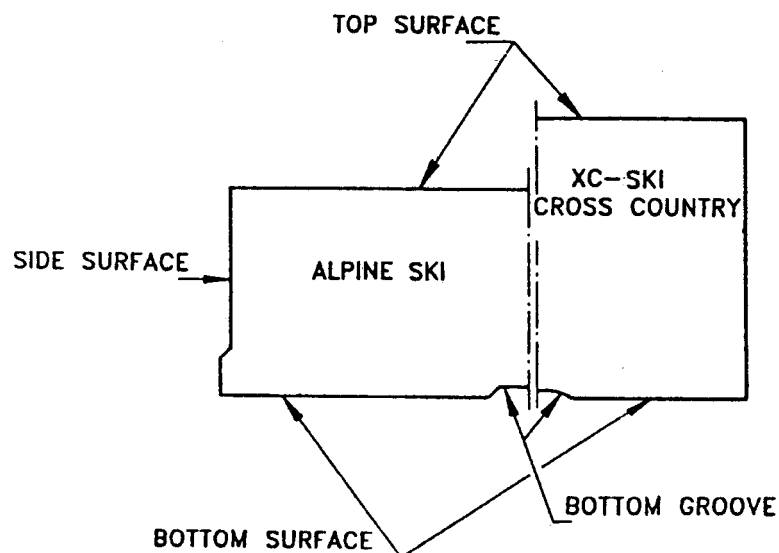


FIG.1 TERMS RELATED TO FUNCTIONAL SKI ELEMENTS

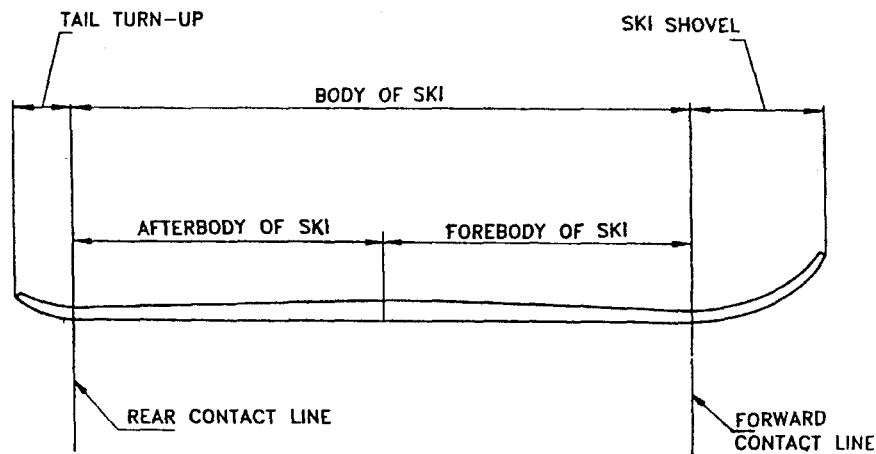


FIG. 2 TERMS RELATED TO BODY OF SKI

**3.1.14 Afterbody of Ski** — The rear half of the ski body towards the tail turn-up.

**3.1.15 Neutral Plane** — The plane internal to the ski where no bending stresses occur when the ski is bent perpendicular to its bottom surface.

**3.2 Terms Relating to Types of Construction**

Modern skis generally consist of composite structures. A composite structure in the technical sense is a type of construction in which different materials are combined in a single structural element such that every material performs optimally to an applied stress. Materials with high strength and stiffness are incorporated mainly in the external zones of the ski cross-section in order effectively to sustain the bending and torsional stresses occurring in the ski. These structural members are called the load-carrying layers, because of their contribution to important properties of the ski such as breaking strength and stiffness. A combination of different materials in the load-carrying layers is possible.

A ski may be classified according to the construction employed and the materials used in the load-carrying members of the ski. For an exact specification of constructional parameters, it is recommended that the ski elements and the materials employed be explicit.

For example:

|                      |                                |
|----------------------|--------------------------------|
| Load carrying layers | Glass fibre reinforced plastic |
| Core                 | Ash wood                       |
| Steel edge           | Cracked edge hardness 45 HRC   |
| Top edge             | Aluminium                      |
| Side walls           | Phenolic material              |

|                          |                                                    |
|--------------------------|----------------------------------------------------|
| Running surface material | Appropriate material to be specified <sup>1)</sup> |
| Top surface material     | Phenolic material                                  |

**3.2.1 Sandwich Construction** — Composite structure in which the ski core is reinforced above and below with materials of higher strength and stiffness than the core itself. These reinforcing materials are generally distributed over the entire width and length of ski. The ski core may be partly hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.2 Box Construction** — Composite structure in which the load-carrying members are built as a combination of webs and flanges arranged in box form following the external shape of the ski cross-section or partly in the interior of the ski. The ski core may be partly hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.3 Wood Ski** — Ski with wood core, not having load-carrying layers of higher strength and stiffness than wood, except the steel edge.

**3.2.4 Metal Ski** — Sandwich or box structure where the load-carrying layers are metal, normally aluminium alloy. The core material may be partly hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.5 Fibreglass Ski** — Sandwich or box construction where the load-carrying facings (except the steel edges or metal top edges) are made from glass fibre reinforced plastics. The core material may be partly

<sup>1)</sup> In ISO 6289 : 1985 a material with a trade name P-tex 1 000 has been indicated with a note that this trade-name for a commercially available product is given for the convenience of users of this International Standard and does not constitute an endorsement of this product by ISO.

hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.6 Carbon Fibre Ski, Aramid Fibre Ski, etc** — Sandwich or box construction where the load carrying facings (except the steel edges or metal top edges) are made from carbon fibre reinforced plastics, aramid fibre or other fibre, usually in combination with glass-fibres.

The core may be partly hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.7 Fibre-metal Ski** — Term sometimes used for skis with load-carrying layers which consist of a combination of fibre reinforced plastics and metals. The core may be partly hollow and made from a variety of materials, such as wood or polyurethane.

**3.2.8 Asymmetrical** — Snowboard which is designed asymmetrically along the longitudinal axis.

**3.2.9 Twin-tip Snowboard** — Snowboard with identical tips.

### 3.3 Terms Relating to Ski Elements

**3.3.1 Load-carrying Layers** — Facings of materials of high strength and stiffness located near the outer zones of the top and bottom surfaces of ski, which, when the ski is bent, carry in one layer tensile stress (tensile facing) and in one layer compressive stress (compression facing) only.

**3.3.2 Load-carrying Webs (Ribs)** — Layers of materials of high strength and stiffness which are usually arranged parallel to the side surface of the ski in combination with the top and bottom that carries bending and shear stresses.

**3.3.3 Core** — Structural element situated between the load-carrying layers and webs respectively.

**3.3.4 Insert** — An inner element designed to increase the pull-out resistance of the binding screws.

**3.3.5 Bottom Edge** — Structural element forming the lateral termination of the bottom surface in order to provide protection and transmission of steering forces. Usually a metal strip.

**3.3.6 Bottom Surface Element (Base)** — Structural element, serving as bottom surface covering layer of the ski. Usually made from low friction plastics with good wax penetration.

**3.3.7 Top Surface Element** — Structural element used on the top surface of the ski. It serves to protect the underlying structural elements as well as providing a base for the top cosmetics.

**3.3.8 Top Edge** — Structural element forming the top surface edge, serving principally for protection.

**3.3.9 Tip Protector** — Structural element for the purpose of protecting side surface, top and bottom edge in the tip and shovel area.

**3.3.10 Tail Protector** — Structural element located near the tail of ski with the purpose of protecting the tail area.

**3.3.11 Kicking Aid** — Special surface configuration or preparation at the bottom surface which aids in the creation of longitudinal forces needed for forward motion.

**3.3.11.1 Step wax application area** — A suitable part of the bottom surface coated with step waxes properly selected in accordance with the slope conditions.

**3.3.11.2 Step pattern** — Steps designed in a special way in order to allow gliding in the forward direction and give resistance to motion in the reverse direction.

**3.3.11.3 Mohair or fur inserts** — Inserts of different sizes used in such a way that the bristles are pointed towards the tail of the ski.

**3.3.11.4 Micro-structure** — Roughness of the gliding surface obtained by special grinding techniques or by the use of composite materials in the ski base. These materials are sometimes used in combination.

As a kicking aid, this type of microstructure is usually confined to the central portion of the running surface.

## 4 TERMS AND SYMBOLS RELATING TO GEOMETRY OF SKI (see Fig. 3)

**4.1 Nominal Length,  $l_N$**  — Length used for indication of the size of the ski.

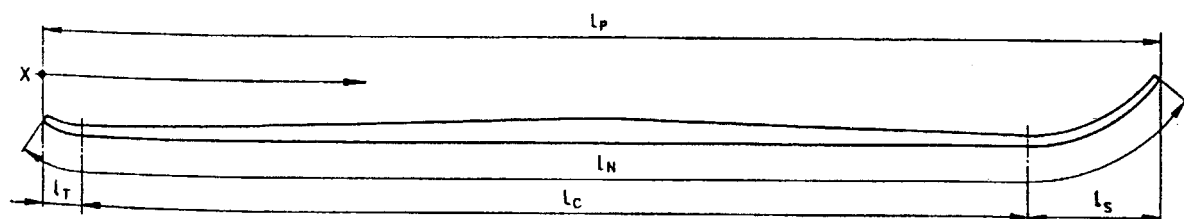


FIG. 3 SYMBOLS RELATED TO SKI LENGTH

The developed length according to 4.2 shall be used to indicate the nominal length.

**4.2 Developed Length** — Length of the running surface measured between the ski tail and the ski tip.

**4.3 Projected Length,  $l_p$**  — Length of the projection of the ski, measured between the ski tail and the ski tip with the ski body pressed against a planar surface.

**4.4 Contact Length,  $l_c$**  — Distance between the two contact lines where a 0.5 mm thick (alpine skis) or 0.1 mm thick (XC-skis) feeler gauge intersects the running surface, with the ski body pressed against a planar surface.

**4.5 Shovel Length,  $l_s$**  — Projected length of the forward turn-up, measured from the tip to the contact line according to 4.4.

**4.6 Tail Turn-up Length,  $l_t$**  — Projected length, measured from the ski tail to the contact line according to 4.4.

**4.7 Side Geometry** — The form of the curve bordering the running surface and defined by the bottom edge.

**4.7.1 Nominal Width** — The nominal width of an alpine ski is the width of the waist. The nominal width of XC-skis is the width measured at the mounting point.

**4.7.2 Side Geometry of Skis with Concave Side Cut** (see Fig. 4)

**4.7.2.1 Width of the shoulder of the ski,  $b_v$**  — Maximum width of the shovel section of the ski.

**4.7.2.2 Width of the waist of the ski,  $b_M$**  — Narrowest width of the running surface in the central section of the ski.

**4.7.2.3 Width of the heel of the ski,  $b_h$**  — Maximum width of the running surface in the rear section of the ski.

**4.7.2.4 Side cut** — The line describing the curved portion of the side contour between the shoulder,  $b_v$ , and the heel,  $b_h$ , of the ski and defined by the bottom surface edge.

**4.7.2.5 Length of the side cut,  $l_k$**  — Distance between the lines at the  $b_h$  and  $b_v$  dimensions.

**4.7.2.6 Side camber,  $d_k$**  — Maximum distance from a line drawn between the widest points of the ski and the side of the ski.

**4.7.2.7 Waist index,  $R_k$**  — Ratio of the side camber,  $d_k$ , to the length of the side cut,  $l_k$

$$R_k = \frac{d_k}{l_k}$$

**4.7.2.8 Taper,  $d_b$**  — Half of the difference between  $b_v$  and  $b_h$

$$d_b = \frac{b_v - b_h}{2}$$

**4.7.3 Side Geometry of Skis with Parallel Side Cut** (see Fig. 5)

**4.7.3.1 Width at the forward contact line** — Width of the running surface at the forward contact line.

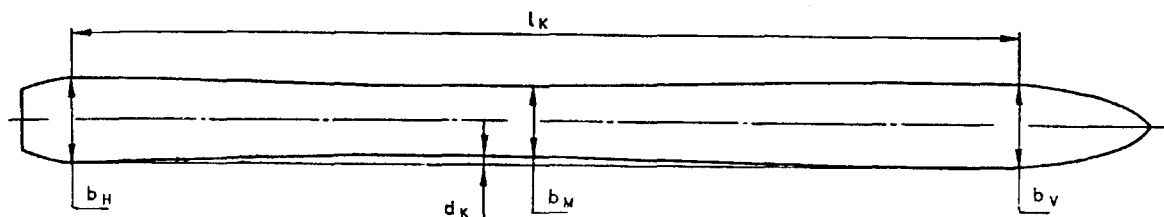


FIG. 4 SYMBOLS RELATED TO SIDE GEOMETRY WITH CONCAVE SIDE CUT

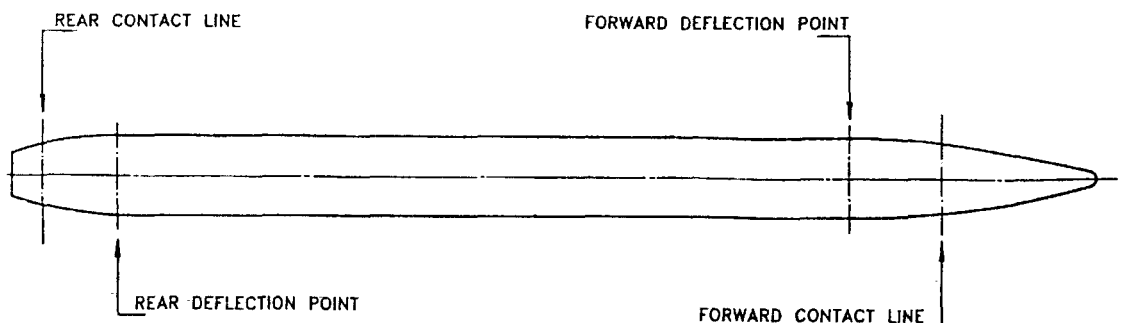


FIG. 5 TERMS RELATED TO SIDE GEOMETRY OF SKI WITH PARALLEL SIDE CUT

**4.7.3.2 Width at the rear contact line** — Width of the running surface at the rear contact line.

**4.7.3.3 Forward deflection point** — The forward end of the parallel sides portion of ski body.

**4.7.3.4 Length of the forward conical shape** — Distance between the forward contact line and the forward deflection point.

**4.8 Thickness of the Ski,  $s$**  — Thickness measured perpendicular to the running surface (see Fig. 6).

**4.9 Distance Between Bottom Surfaces** — Maximum distance between the bottom surfaces of two skis, measured in the vertical position.

**4.10 Tip Height,  $h_s$**  — Height of the underside of the tip measured from a planar surface with the ski body pressed against the surface (see Fig. 6).

**4.11 Tail Height,  $h_t$**  — Height of the underside of the tail from a planar surface measured with the ski body pressed against the surface. (see Fig. 6)

**4.12 Camber Height,  $h_k$**  — Distance between the running surface of the ski and a planar surface, measured with the ski resting freely under its own mass.

**4.13 Bottom Camber,  $h_b$**  — Maximum camber height measured at the highest point of the running surface (see Fig. 7).

**4.14 Maximum Camber Length,  $l_{k\max}$**  — Length of the camber of the unloaded ski when the ski is placed on a planar surface, measured with the ski resting freely under its own mass (see Fig. 7).

**4.15 Residual Camber Height,  $h_{RF}$**  — Distance measured at the load application point  $P$ , 8 cm behind the binding mounting point between the running surface of the ski (XC) and a flat horizontal surface when the ski is subjected to a load,  $F$  (see Fig. 8).

**4.16 Contact Load** — Load which reduces the residual camber height to 0.3 mm.

**4.17 Residual Camber Length,  $l_{RF}$**  — Length of separation between the running surface of the ski (XC) and a flat horizontal surface on which the ski is pressed against by a load,  $F$  (see Fig. 8).

**4.18 Standard Residual Camber Length,  $l_{RS}$**  — The residual camber length remaining after a standard load,  $F_s$ , has been applied.

**4.19  $x$  Co-ordinate for Ski Measurements** — The  $x$  co-ordinate originates at the ski tail and defines a point on the ski where a measurement is to be taken. The length of the  $x$  co-ordinate shall be written as a subscript of the measured value.

For example :  $s_{123} = 1.6$  cm means that the thickness is 1.6 cm at a distance of 123 cm from the ski tail.

## 4.20 Terms, Definitions and Symbols Relating to Length and Position of Kicking Aid Area (see Fig. 9)

### 4.20.1 Length of the Kicking Aid, $l_{ST}$

- For waxed skis, the area in which the stepping wax is applied. This area is variable and can only be defined exactly if waxing marks are indicated.
- For no-wax skis, the area of the bottom surface in which the kicking aids are located.

**4.20.2 Positioning Index,  $d_{ST}$ , of the Kicking Aid Area** — Distance between the centre of the kicking aid and the binding mounting point MP according to the equation :

$$d_{ST} = x_{MP} - x_{STM}$$

where

$x_{MP}$  is the position of the binding mounting point MP; and

$x_{STM}$  is the position of the centre of the kicking aid.

If the centre of the kicking aid is in front of the binding mounting point,  $d_{ST}$  is a negative number. If the centre of the kicking aid is behind the binding mounting point,  $d_{ST}$  is a positive number.

## 5 TERMS AND SYMBOLS FOR PHYSICAL PROPERTIES

**5.1 Mass of Ski,  $m$**  — The mass of a finished manufactured ski without any mounted parts.

**5.2 Balance Point (XC-ski)** — A line perpendicular to the centre-line of the running surface at which the XC-ski is in equilibrium (balance) when placed on a fulcrum.

**5.3 Polar Moment of Inertia (Alpine Ski),  $I$**  — The mass moment of inertia of the ski about its centre of gravity.

**5.4 Spring Constant (Alpine Ski),  $c$**  — The ratio of the force,  $F$ , applied to the ski, to the corresponding deflection,  $f$ , under the respective test conditions.

$$c = \frac{F}{f}$$

The spring constants of certain sections of the ski are designated by the following subscripts:

- centre      M
- shovel     S

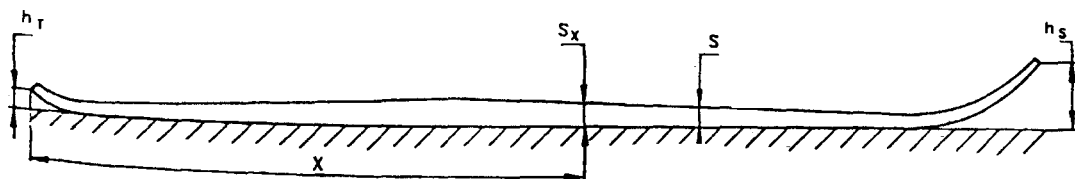


FIG. 6 SYMBOLS RELATED TO SKI HEIGHT AND THICKNESS

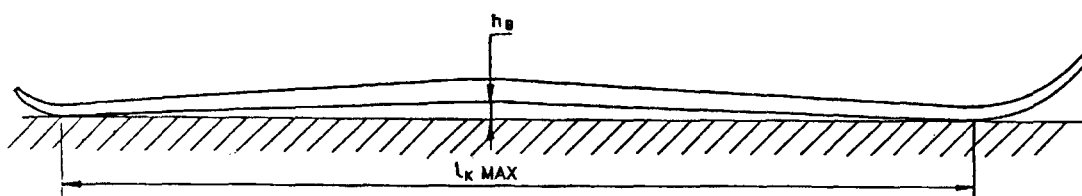


FIG. 7 SYMBOLS RELATED TO BOTTOM CAMBER

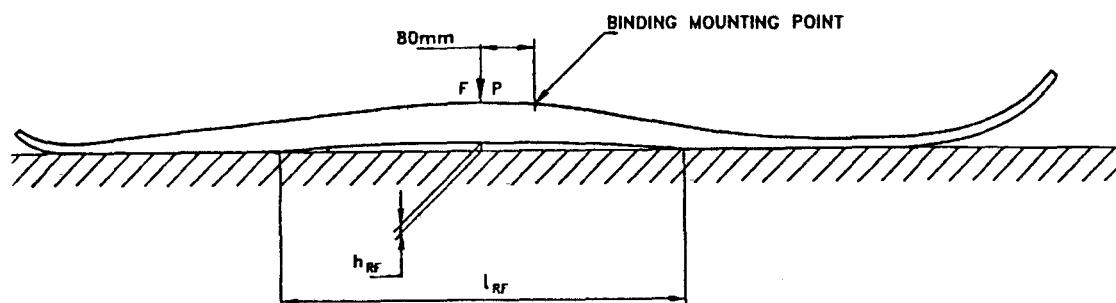


FIG. 8 SYMBOLS RELATED TO SKI RESIDUAL CAMBER

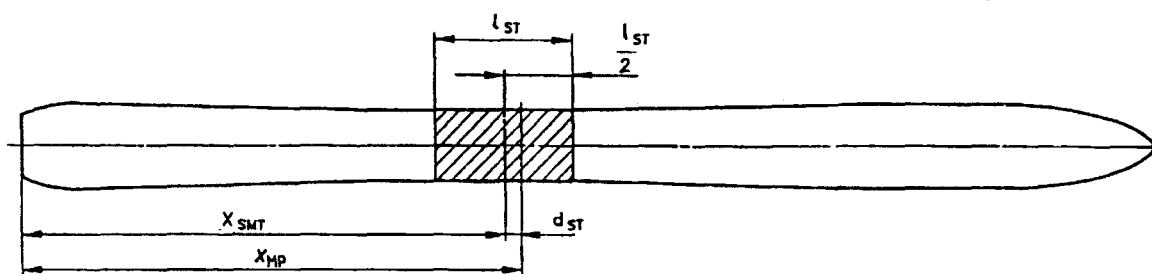


FIG. 9 SYMBOLS RELATED TO SKI LENGTH AND POSITION OF KICKING AID AREA

- rear R
- afterbody A
- forebody B

**5.5 Spring Constant Balance (Alpine Ski),  $B$**  — The ratio of the afterbody spring constant,  $c_A$ , to the forebody spring constant,  $c_B$ :

$$B = \frac{c_A}{c_B}$$

**5.6 Torsional Spring Constant (Alpine Ski),  $c_T$**  — The ratio of the torque,  $M$ , applied to the ski to the corresponding torsion angle,  $\alpha$

$$c_T = \frac{M_t}{\alpha}$$

The subscript of the forebody torsional spring constant is B and the one of the afterbody torsional spring constant is A.

**5.7 Deformation Load (Alpine Ski),  $F_D$**  — The load which causes a permanent deformation of the ski under the respective test conditions.

**5.8 Breaking Load,  $F_B$**  — The maximum load which causes failure of the ski (breaking of delamination) under the respective test conditions.

**5.9 Bending Vibrational Characteristics (Alpine Ski)** — Characteristics indicated by natural frequency and half life.

**5.10 Natural Frequency (Alpine Ski),  $f$**  — The number of vibrations per unit time.

**5.11 Half Life (Alpine Ski),  $t_{1/2}$**  — The time required to reduce the initial amplitude of vibration by half.

**5.12 Fatigue Characteristics** — The change of essential properties due to long term cyclical loading.

## 6 TERMS RELATING TO THE BINDING MOUNTING AREA

**6.1 Binding Mounting Area** — An area on top of the ski within which the binding mounting screws may be located.

**6.2 Mounting Point** — A location on the ski that will properly locate the boot along the length of the ski.

The mounting point corresponds to the boot sole mark established by IS 9315 : 1979 'Dimensions for boot/binding interface (greater than size 36) for alpine skis' for alpine skis, and to the front upper part of the boot according to ISO 6959 : 1983<sup>1)</sup> 'Cross-country skis boots with three pin holes — Dimensions, interface

and design' for XC-skis. For XC-skis, the mounting point indicates placement of drilling jig.

**6.2.1 "4 × 4"** — Four-hole square pattern of inserts to mount the bindings on the snowboard.

**6.3 Ski Binding Screw (SBS)** — A fastener which after mounting ensures attachment of the binding and ski by axial pretension.

**6.4 Penetration Depth,  $d$**  — The length of that portion of the screw shaft which penetrates the ski body, measured from the ski top surface to the end of the screw.

**6.5 Driving Torque** — The maximum value of the moment which is required to drive the ski binding screw into the drill hole of the ski, in accordance with defined conditions, without lubrication and without tapping.

**6.6 Tightening Torque** — The moment specified in the mounting instructions, which is recommended for tightening the ski binding screw to ensure sufficient fastening.

**6.7 Stripping Torque,  $T_s$**  — Maximum measurable moment which causes damage to the internal thread in the ski or the thread of the screw if the already tightened screw is further loaded by a driving moment.

**6.8 Static Screw Retention Strength** — The load, applied quasistatically and in the direction of the centre-line of the screw, which is required to pull out two test screws, at which the material of the top skin of the ski fails or the top skin is delaminated.

**6.9 Leash** — Cord-like device wherein one end is attached to the top surface of the ski or to the binding and the other end provides an attachment to one of the skier's/snowboarder's legs.

## 7 TERMS RELATING TO SKI PERFORMANCE

### 7.1 Alpine Skis

**7.1.1 Terms Relating to Straight Running Performance without Edging**

**7.1.1.1 Lateral tracking stability** — Ski characteristics pertaining to maintaining fall-line direction at a given speed when subjected to alternating left and right deviations.

**7.1.1.2 Vertical tracking stability** — Ski characteristic pertaining to terrain conformity at a given speed with respect to disturbing vibrations.

**7.1.1.3 Shock absorption** — Ski characteristic pertaining to bump and dip conformity at a given speed with respect to shock transfer to the skier.

<sup>1)</sup> No equivalent Indian Standard exists.

### 7.1.2 Terms Describing Traversing Performance

**7.1.2.1 Traversing stability** — Ski characteristic pertaining to maintaining a straight traverse track. The skier is in a normal traversing body position and edging is sufficient (skis do not rotate up or down the slope) to avoid side slipping.

**7.1.2.2 Traversing edge response** — Ski characteristic pertaining to a smooth change from carving to skidding and *vice versa* without the skis rotating up or down the slope when the edge setting is decreased or increased.

### 7.1.3 Terms Describing Turning Performance

**7.1.3.1 Turn initiation response** — Ski characteristic pertaining to ski reaction to common turning initiation techniques with respect to over-turning or excessive turning resistance.

**7.1.3.2 Turn execution response** — Ski characteristic pertaining to maintaining a stable turn, after initiation, without corrective actions by the skier. (Over-turning, railing, chattering, and excessive turning resistance are examples of negative response.)

**7.1.3.3 Turn completion response** — Ski characteristic pertaining to ease with which a turn may be completed.

**7.1.3.4 Turning quickness** — Ski characteristic pertaining to the reproducibility of ski reaction in a sequence of short turns with respect to overturning or excessive turning resistance.

**7.1.3.5 Carving response** — Ski characteristic pertaining to the execution of a carved turn of a given radius on hard snow with minimal skidding or chattering.

**7.1.3.6 Skidding response** — Ski characteristic pertaining to the smoothness and stability of a skidded turn during the execution of a turn, traversing or stopping.

### 7.1.4 General Performance Terms

**7.1.4.1 Edge grip** — Ski characteristic pertaining to the prevention of undesired side slipping on hard snow at a given slope steepness and a given edging angle.

**7.1.4.2 Steering sensitivity** — Ski characteristic pertaining to ski reaction to steering actions of the skier such as edge setting, weight shifting and dynamic weighting/unweighting.

**7.1.4.3 Forgiveness** — Ski characteristic pertaining to the reduction of the effect of slope disturbances or exaggerated control actions of the skier.

**7.1.4.4 Edge grip balance** — Ski characteristic pertaining to edge grip distribution fore and aft of the ski in order to allow a normal skier body position in a

given skiing situation.

**7.1.4.5 Chattering** — Ski characteristic pertaining to intermittent edge grip tendency.

**7.1.4.6 Railing** — Ski characteristic pertaining to ski tendency to maintain direction in spite of applied control actions.

**7.1.4.7 Liveliness** — Ski characteristic pertaining to quick ski reaction to terrain changes and skier actions.

**7.1.4.8 Quietness** — Ski characteristic pertaining to the ski's ability to dampen disturbances like shocks, vibration and other instabilities.

## 7.2 Cross-country Skis

### 7.2.1 Terms Relating to Straight Running Performance without Edging

**7.2.1.1 Gliding** — Characteristic of the ski which relates to the smoothness and the speed of the gliding phase.

**7.2.1.2 Retention (Properties)** — Characteristic of the ski not to glide backwards during kicking phase.

**7.2.1.3 Lateral tracking stability** — Characteristic of the ski to maintain the track line direction.

**7.2.1.4 Springiness** — Elastic response of the ski to the impulse of the skier.

### 7.2.2 Terms Describing Turning Performance

**7.2.2.1 Turn executing response** — Ski characteristic pertaining to maintaining a stable turn.

**7.2.2.2 Skidding response** (see 7.1.3.6).

### 7.2.3 General Performance Terms

**7.2.3.1 Edge grip** — Ski characteristic relevant to skidding, snow plough, and fish bone climbing. Generally pertaining to the prevention of side slipping.

**7.2.3.2 Frictional noise** — Sound produced by friction between snow and ski.

**7.2.3.3 Icing** — Phenomenon of ice deposition on the running surface of the ski depending on the snow conditions and the properties of the gliding surface.

**7.2.3.4 Waxability** — Characteristic of the ski to be easily waxed and to maintain the waxed condition.

## 7.3 Terms Relating to the Performance and the Use of Snowboards

**7.3.1 To Ride** — To move with a snowboard.

**7.3.2 Carving** — Extreme turning along the edge.

**7.3.3 Skidding** — Sliding without using the edge.

**7.3.4 Riding Fakie** — Snowboard riding in the

opposite ways, that is the tail of the board used as the front end.

**7.3.5 Backside** — General term for rides and jumps during which pressure is put on the heel of the foot/leg.

*Example* — Backside turn.

**7.3.6 Frontside Turn** — Turn performed with pressure on the toe of the foot.

**7.3.7 Half Pipe** — U-shaped channel built in the snow for snowboard freestylers.

**7.3.8 Ollie** — Jump initiation, where the board is bent by a front leg traction and back leg pressure.

## 8 MEASURING CONDITIONS

### 8.1 Conditioning

**8.1.1** All measurements of geometrical characteristics shall be carried out on a finished, manufactured ski without any fittings and ancillary parts; it shall have been conditioned for at least 2 h at a temperature of  $27 \pm 2$  °C and relative humidity of  $65 \pm 2$  percent.

### 8.2 Tolerances

**8.2.1** Data published by the manufacturer based on

this standard shall be subject to the tolerance limits given in Table 1.

**Table 1 Tolerance Limits**  
(Clause 8.2.1)

| Dimension                 | Alpine Ski<br>(mm) | Cross-country Ski<br>(mm) |
|---------------------------|--------------------|---------------------------|
| (1)                       | (2)                | (3)                       |
| Length                    | $\pm 10$           | + 30<br>– 20              |
| Width                     | + 0.5<br>– 1.5     | + 0.5<br>– 1.5            |
| Thickness                 | + 0.5<br>– 1.2     | + 0.5<br>– 1.2            |
| Height                    | $\pm 10$           | $\pm 10$                  |
| Bottom camber             | $\pm 5$            | $\pm 10$                  |
| Residual<br>camber height | —                  | + 0.8<br>– 0.5            |

### 8.3 Test Report

**8.3.1** The test report apart from the specified values and observed values shall also include complete identification of the ski (brand or trade-name, model designation, size and manufacturer's name).

## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

### Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc : No. BP 27 (0076).

### Amendments Issued Since Publication

| Amend No. | Date of Issue | Text Affected |
|-----------|---------------|---------------|
|           |               |               |
|           |               |               |
|           |               |               |

### BUREAU OF INDIAN STANDARDS

#### Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110 002  
Telephones : 323 01 31, 323 33 75, 323 94 02

Telegrams : Manaksanstha  
(Common to all offices)

#### Regional Offices :

|                                                                                                                                                                                               | Telephone                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg<br>NEW DELHI 110 002                                                                                                                        | { 323 76 17<br>323 38 41                       |
| Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Kankurgachi<br>CALCUTTA 700 054                                                                                                          | { 337 84 99, 337 85 61<br>337 86 26, 337 91 20 |
| Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160 022                                                                                                                                       | { 60 38 43<br>60 20 25                         |
| Southern : C. I. T. Campus, IV Cross Road, CHENNAI 600 113                                                                                                                                    | { 235 02 16, 235 04 42<br>235 15 19, 235 23 15 |
| Western : Manakalaya, E9 MIDC, Marol, Andheri (East)<br>MUMBAI 400 093                                                                                                                        | { 832 92 95, 832 78 58<br>832 78 91, 832 78 92 |
| Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE.<br>FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR.<br>LUCKNOW. NAGPUR. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. |                                                |